

Alexander J. B. Trevor

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Unit 1803
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- RESEARCH INTERESTS Semantic mapping, point cloud perception, Simultaneous Localization and Mapping (SLAM), computer vision, mobile manipulation, augmented reality.
- EDUCATION **Georgia Institute of Technology**, Atlanta, Georgia, USA
PhD in Robotics **August 2006 – Summer 2014 (expected)**
 - Thesis: Semantic Mapping for Service Robots: Building and Using Maps for Mobile Manipulators in Semi-Structured Environments
 - Advisor: Professor Henrik I. Christensen
 - Committee: Henrik Christensen, Frank Dellaert, Dieter Fox, Ayanna Howard, Jim Rehg
 - Expected Graduation: Summer 2014**Carnegie Mellon University**, Pittsburgh, Pennsylvania, USA
BS in Computer Science **August 2001 – May 2006**
BS in Information Systems **August 2001 – May 2006**
- CONFERENCE PUBLICATIONS A. J. B. Trevor, J. G. Rogers III, H. I. Christensen, “OmniMapper: A modular multimodal mapping framework”, *ICRA*, 2014 (forthcoming).
C. Choi, A. J. B. Trevor, H. I. Christensen, “RGB-D Edge Detection and Edge-based Registration”, *IROS*, 2013.
A. J. B. Trevor, J. G. Rogers III, H. I. Christensen, “Planar Surface SLAM with 3D and 2D Sensors”, *ICRA*, 2012.
J. G. Rogers III, A. J. B. Trevor, C. Nieto-Granda, H. I. Christensen, “Simultaneous Localization and Mapping with Learned Object Recognition and Semantic Data Association”, *IROS*, 2011.
J. G. Rogers III, A. J. B. Trevor, C. Nieto-Granda, A. Cunningham, M. Paluri, N. Michael, H. I. Christensen, “Effects of Sensory Precision on Mobile Robot Localization and Mapping”, *ISER*, 2010.
J. G. Rogers III, A. J. B. Trevor, C. Nieto-Granda, H. I. Christensen, “SLAM with Expectation Maximization for Moveable Object Tracking”, *IROS*, 2010.
C. Nieto-Granda, J.G. Rogers III, A. J. B. Trevor, H. I. Christensen, “Semantic Map Partitioning in Indoor Environments Using Regional Analysis”, *IROS*, 2010.
A. J. B. Trevor, J. G. Rogers III, C. Nieto-Granda, H. I. Christensen, “Applying domain knowledge to SLAM using virtual measurements”, *ICRA*, 2010.
A. J. B. Trevor, H. W. Park, A. M. Howard, C. C. Kemp, “Playing with toys: Towards autonomous robot manipulation for therapeutic play”, *ICRA*, 2009.
C. C. Kemp, C. Anderson, H. Nguyen, A. J. B. Trevor, Z. Xu, “A point-and-click interface for the real world: Laser designation of objects for mobile manipulation”, *HRI*, 2008.
C. Anderson, B. Axelrod, J. Case, J. Choi, M. Engel, G. Gupta, F. Hecht, J. Hutchison, N. Krishnamurthi, J. Lee, H. Nguyen, R. Roboerts, J. Rogers, A. J. B. Trevor, H. Christensen, C. C. Kemp, “Mobile Manipulation - A Challenge in Integration”, *SPIE Defense & Security*, 2008.
- WORKSHOP PUBLICATIONS A. Trevor, S. Gedikli, R. B. Rusu, H. I. Christensen. “Efficient Organized Point Cloud Segmentation with Connected Components”, *3rd Workshop on Semantic Perception, Mapping and Exploration (SPME)*, 2013.
A. J. B. Trevor, J. G. Rogers III, A. Cosgun, H. I. Christensen, “Interactive Object Modeling & Labeling for Service Robots”, *Human Robot Interaction (HRI) Video Session*, 2013.
M. Levihn, M. Dutton, A. J. B. Trevor, M. Stilman. “Detecting Partially Occluded Objects via Segmentation and Validation”, *IEEE Workshop on Robot Vision*, 2013.

D. Holz, A. J. B. Trevor, M. Dixon, S. Gedikli, R. B. Rusu, S. Behnke. “Fast segmentation of RGB-D images for semantic scene understanding”, *ICRA 2012 Workshop on Semantic Perception and Mapping for Knowledge-enabled Service Robotics (SPMK)*, 2012.

A. J. B. Trevor, A. Cosgun, J. Kumar, H. I. Christensen. “Interactive Map Labeling for Service Robots”, *IROS Workshop on Active Semantic Perception*, 2012.

A. J. B. Trevor, J. G. Rogers III, C. Nieto-Granda, H. I. Christensen, “Feature-based Mapping with Grounded Landmark and Place Labels”, *RSS Workshop on Grounding Human-Robot Dialog for Spatial Tasks*, 2011.

A. J. B. Trevor, J. G. Rogers III, C. Nieto-Granda, H. I. Christensen, “Tables, Counters, and Shelves: Semantic Mapping of Surfaces in 3D”, *IROS Workshop on Semantic Mapping*, 2010.

C. Choi, J. Huckaby, J. Rogers, A. Trevor, J. Case, H.I. Christensen, “Towards Semantic Perception for Mobile Manipulation”, *IROS Workshop on Semantic Perception for Mobile Manipulation*, 2009.

H. Nguyen, C. Anderson, A. J. B. Trevor, A. Jain, Z. Xu, “EL-E: An Assistive Robot that Fetches objects from Flat Surfaces”, *HRI Workshop on Robotic Helpers: User Interaction Interfaces and Companions in Assistive and Therapy Robots*, 2008.

C. Anderson, B. Axelrod, J. Case, J. Choi, M. Engel, G. Gupta, F. Hecht, J. Hutchison, N. Krishnamurthi, J. Lee, H. Nguyen, R. Roboerts, J. Rogers, A. J. B. Trevor, H. Christensen, C. C. Kemp, “A New Mobile Manipulation Platform for Automatic Coffee Retrieval”, *RSS Workshop on Mobile Manipulation (Poster)*, 2007.

PROFESSIONAL
EXPERIENCE

Willow Garage

Research Intern

Spring 2012

Developed techniques for efficient organized point cloud segmentation, and used the results of such per-frame segmentation in 3D semantic mapping applications. Resulting code is available as part of the Point Cloud Library (PCL), and led to publications.

Science Applications International Corporation (SAIC)

Research & Development Intern

Summer 2005

Developed multi-robot task allocation system, and assisted with several demonstrations for customers, including the US Coast Guard and US Air Force.

Credit Suisse

IT Summer Intern

Summer 2004

Worked on a Web based real time profit & loss aggregation and reporting system for the high yield desk using C# and ASP.net, and designed and implemented a report distribution system using C# and ASP.net.

CODE SPRINT
EXPERIENCE

PCL Honda Research Code Sprint (HRCS)

Developer

Fall 2012

Developed techniques for segmenting point clouds generated from stereo cameras, to detect drivable road-surfaces and obstacles. Open source code available in PCL.

PCL Google Summer of Code (GSOC)

Mentor

Summer 2012

Mentored two students: Changyun Choi on Organized Edge Extraction, and Christian Potthast on Dense CRF Segmentation. Both projects were successful, and the resulting code is available in PCL.

TEACHING
EXPERIENCE

Georgia Institute of Technology

Teaching Assistant for CS8803-3D

Spring 2010

Course Title: 3D Reconstruction and Mapping in Computer Vision, Robotics, & Augmented Reality

Professor: Frank Dellaert

Georgia Institute of Technology

Teaching Assistant for CS4911

Spring 2007

Course Title: Software Engineering Design Project

Professors: Bob Waters and Rich LeBlanc

Carnegie Mellon University

Teaching Assistant for CS111

Summer 2003 - Spring 2004

Course Title: Intermediate / Advanced Programming

Professor: Don Slater

SERVICE

Reviewer for several conferences, including RSS, ICRA, IROS, RO-MAN, Journal of Field Robotics, Artificial Intelligence, Image and Vision Computing.

Faculty Hiring Committee, School of Interactive Computing, Georgia Institute of Technology. 2013-2014.

PROGRAMMING
SKILLS

Languages: C++, C, Python, Matlab.

Libraries and Frameworks: OmniMapper, GTSAM, Point Cloud Library (PCL), ROS, OpenCV.

Operating Systems and Tools: Linux, Mac OS, Windows, $\text{\LaTeX} 2_{\epsilon}$.

LANGUAGES

English (native speaker), Japanese (studied in undergraduate), French (studied in high school)

CITIZENSHIP

US Citizen

REFEREES

Available on request.